

## Promoting Higher Order Thinking Skills via Teaching Practices

MALINI GANAPATHY

*English Language Studies Section  
School of Languages, Literacies and Translation  
Universiti Sains Malaysia, Malaysia  
malinik@usm.my*

MANJET KAUR MEHAR SINGH

*English Language Studies Section  
School of Languages, Literacies and Translation  
Universiti Sains Malaysia, Malaysia*

SARJIT KAUR

*English Language Studies Section  
School of Humanities  
Universiti Sains Malaysia, Malaysia*

LIEW WAI KIT

*School of Languages, Literacies and Translation  
Universiti Sains Malaysia, Malaysia*

### ABSTRACT

*The birth of the Malaysia Higher Education Blueprint (2015-2025) consolidates the Ministry's overriding aspiration to create a higher education system that ranks among the world's leading education systems and that enables Malaysia to compete in the global economy by specifically promoting Information and Communication Technologies (ICT) and innovations that address students' needs and enable greater personalisation of the learning experience (Ganapathy et al. 2016). This exploratory study is vital in gaining deeper insights into the current teaching and learning practices used by ESL lecturers, the types of ICT used in their classes, their views on the integration of these skills into the curriculum and the application methods of teaching and learning using ICT to promote Higher Order Thinking Skills (HOTS). Data were collected using purposive sampling where 40 participants were selected to take part in answering a questionnaire and participating in an interview. These respondents for this study comprised of a group of lecturers teaching English major degree courses in a public university in Malaysia. The findings of this study contribute a significant amount of information to the statistics of ESL teaching and learning in higher education especially in using ICT to promote HOTS. Findings from this study provide several important insights on the potential opportunities of technologies in facilitating higher order thinking but success lies on the tasks that are appropriately designed for promoting the content. This study found that ESL lecturers encounter challenges that need to be addressed in order to facilitate the learning process with the integration of ICT as a supplementary tool in promoting higher order thinking skills.*

*Keywords: Malaysia Higher Education Blueprint; information and communication technologies; higher order thinking skills; teaching; learning*

### INTRODUCTION

Many educators acknowledge the importance of critical thinking in the educational curricula but most are discouraged because of the difficulty of implementing critical thinking strategies and activities in the classroom due to time constraint. Hence, explicitly including the development of critical thinking skills in a course curriculum is an alteration of the current practice (Stroupe 2006). In general, universities do not teach thinking skills to the degree required by emerging technologies and increasingly complex global human relations. (Petko 2012). The gap between the intentions of lecturing staff and the reliance on assessment strategies that focus on the reproduction of knowledge rather than its manipulation or

transformation raises the question of whether higher order learning is in fact being assessed (Moir 2013, Ganapathy et al. 2016). The curriculum emphasis is less on covering content and more on stimulating students' understanding while supporting their interests and aspirations: teaching delivers a holistic curriculum across different domains of learning rather than focusing on subjects. Maximising learning of higher-order thinking skills (HOTs) with information and communication technology (ICT) has been deep-rooted and emphasised in multiple developed countries such as the United Kingdom, the United States of America and Singapore. It is to be noted that these assessments on ICT integration to promote HOTs in education systems have been focusing mainly on primary and secondary level teaching and learning.

In Malaysia, the higher education ministry aims to build a system which is less focused on traditional academic pathways and in this vein, transform the mass product delivery model of teaching to technology-enabled innovations that deliver and tailor education for all students (Malaysian Education Blueprint 2015-2025). Through this programme, lecturers are expected to integrate ICT into their respective higher education institutional curriculum. Another important aspect of tertiary education which requires educators to promote HOTs was heavily emphasised in the National Higher Education Action Plan (NHEAP) and the Malaysian Education Blueprint as well. Such innovative ideals and strategies require researchers to investigate to what extent it is incorporated among university lecturers and students.

ICT can provide Generation Y students with an optimum learning state and as an answer to solve their short attention span. Indeed, Subran (2011) has confirmed the efficiency of promoting HOTs through the use of ICT as it is viewed as a promising platform for the application of constructivist principles to both learning and teaching as it helps produce good learning outcomes (Ali 2012). People gain most from instructional materials as designers instead of students who passively use those materials, so students should therefore become knowledge constructors rather than knowledge users (Crawford 2002).

Originating from Bloom's taxonomy of learning, HOTs is defined by three upper levels of cognitive skills in the learning hierarchy: analysis, synthesis and evaluation. Analysis refers to the ability of learners to deconstruct the structure of knowledge and categorise them into their respective groups as well as identify the relationship among the components of the knowledge structure (Marzano & Kendall 2006). For anything that is of original creation, it would be labelled under synthesis. This cognitive skill can be illustrated using the following verbs: assemble, design, formulate and develop (Narayanan & Adithan 2015). On the other hand, the cognitive skill of evaluation requires learners to justify the value of a piece of information for its relevancy and consistency. Students never get to the point where they have the opportunity to engage in HOTs due to the traditional concept of learning being sequential and linear (Zohar, Degani & Vaaknin 2001).

Adoption of innovative modes such as active learning or problem-based learning should be encouraged where appropriate to promote the development of communication, problem-solving and self-directed learning skills (NHEAP 2007). The competency of the lecturers in teaching thinking skills in classroom is also one of the crucial factors that help to foster the development of thinking skills among the students (Othman & Mohammad, 2014).

The Ministry of Education is committed to promote thinking skills in Malaysian education institutions (Ali 2002) by implementing the i-Think programme in collaboration with Agensi Inovasi Malaysia (AIM) to develop student thinking skills and to cultivate lifelong learning in primary and secondary schools in 2013 (Tenth Malaysia Plan 2011). In relation to the discussion above, this study aims to analyse the perceptions of university lecturers, challenges and importance of ICT utilisation in promoting HOTs in the English as a second language classroom in the tertiary sector.

## LITERATURE REVIEW

Majumdar (2015) posits the view that the use of ICT is transforming the nature and process of the learning environment into a new culture. ICT changes the traditional educational approach (teacher-centred learning) into a more interactive and engaging environment to facilitate authentic knowledge transmission where students become producers of knowledge under the guidance from the lecturers (student-centred learning). Learning becomes more interactive when students are given the opportunity to use ICT as supplementary tools to promote their learning outcomes.

A study carried out by Ali (2012) showcases Malaysian polytechnic lecturers' teaching practices with ICT utilisation to promote HOTs. The study also sets out to investigate the lecturers' teaching methods and strategies as well as their experiences concerning the issue of using ICT to promote HOTs in their classrooms. The results show that the use of ICT by lecturers is influenced by their confidence level and the amount of support and training received from the institution. Another finding shows that the lecturers acknowledge the importance of ICT in higher education, but their teaching does not conform to the facilitation of HOTs in the classroom. The research suggests incorporating viewpoints from other stakeholders such as the administrators, students and the community in order to glean comprehensive understanding of the issue.

Razak and Lee (2012) attempted to examine the impact of a technological application, Wiki on the promotion of higher order thinking within the teaching and learning of literary text. From the study, they concluded that Wiki is made great with effective pedagogical planning, which includes step-by-step guidance from the teacher during the peer collaboration process.

Subran (2011) mentioned three main components of Web 2.0 that would support interactivity among users, which allows people to collaborate and share information online: blogs, wikis and Social Networks. Chittleborough et al. (2008) also studied the use of Web 2.0 technologies to promote HOTs and found that lecturers needed help through certain professional development programmes to be able to situate technologies meaningfully within their pedagogical repertoires.

A study conducted by Choy and Cheah (2009) stated that lecturers exhibited a lack of understanding on the requirements needed in teaching critical thinking skills in their classrooms. It was suggested that a structured method of teaching is needed to assimilate both thinking skills and content in education. The researchers advocated the view that further studies should include the perceptions of lecturers on the main challenges faced in their efforts to promote critical thinking in their lessons.

Waycott et al. (2009) reported that many staff have a positive outlook towards the use of technology in enhancing learning and are highly well equipped with knowledge and skills on education technology while students do not have special preference for increased integration of ICT in their studies. Hence, the synthesis of the literature shows that there are numerous benefits and some challenges for both teachers and students in using technology in learning and teaching environments.

## METHODOLOGY

This study employed both quantitative and qualitative approaches whereby questionnaires were administered and semi-structured interviews were conducted among ESL lecturers. This study surveyed the views of 40 full-time ESL lecturers who are teaching English major courses in a public research university in Malaysia. The research objectives of the study

aimed to examine the level of awareness of using ICT tools and resources among the English language lecturers in terms of their frequency of use, type of learning activities that promote HOTS and level of usage. The study also sought to find out if the lecturers faced any challenges in promoting HOTS using ICT.

A total of 40 lecturers from various English language departments Universiti Sains Malaysia were purposively selected to participate in this study. The questionnaire which used a 5-point Likert scale, was administered to the respondents and collected after they had completed it. Four respondents who volunteered were then invited to attend an interview session which was arranged at a mutually convenient time in their respective offices. Semi-structured interviews were conducted with each of the four participants who were coded as Lecturers A, B, C and D.

The questionnaire used in the study was adapted from Ali (2012) because of its relevance in meeting the aims of the study. A likert scale was used comprising of 1-Always, 2- Often, 3- Sometimes, 4- Seldom and 5- Never. The questionnaire also included additional items based on the literature review in the field and incorporated items from Bloom's taxonomy of learning (higher order skills of analysing, evaluating and creating). A pilot study was carried out in order to examine the reliability and validity the questionnaire. The reliability of the survey was checked using the Cronbach's alpha and it had a 0.93 overall consistency score which indicated that it could be used in the main study. The interview questions were drawn from the questionnaire based on each section and this helped to triangulate the data.

The research questions posed in this study were aimed at analysing the practices of Malaysian university ESL lecturers regarding the use of ICT in the teaching and learning process of English major courses in relation to promoting HOTS. To gain a better understanding of the situation, descriptive statistics such as frequency, mean score and standard deviation were generated through the Statistical Package for the Social Sciences (SPSS) Version 20. The results of the semi-structured interviews were deductively described since the sample size was small. Results were described descriptively based on the notes taken during the interviews and counter checked with the tape recorded transcripts to ensure accuracy. Key ideas raised by the participants were summarised in order to provide central ideas for data analysis and triangulate it with the quantitative data.

## RESULTS

A majority (70%) of the ESL lecturers in this research study are female lecturers. The remaining 12 lecturers (30%) who participated in this study are male lecturers. Most (90%) of the respondents in this study are Malaysians. The remaining 10% of the population of this quantitative study consist of international lecturers from different countries such as the United Kingdom, Comoros Island Iraq and Yemeni. Each of the international lecturers consists of 2.5% from the total population. The largest portion (37.5%) of the respondents is from the School of Humanities whereas only a few (2%) respondents are from the School of Distance Learning. Almost a third (30%) of the total respondents are from the School of Education and 27.5% of the respondents are from the School of Languages, Literacies and Translation. Out of the 40 respondents, a majority (82.5%) of the respondents have PhD qualification whereas the remaining minority (17.5%) has Master qualifications. Most of the lecturers in this study have more than 10 years of working experience (72.5%). On the other hand, 12.5% of the respondents have 1-5 years of experience whereas a small portion (10%) of lecturers has 5-10 years working experience. The remaining 5% did not provide exact data.

Table 1 below shows the usage of different ICT tools by the lecturers teaching English major courses:

TABLE 1. Usage of ICT to teach English

Usage of ICT to teach English	Yes (%)	No (%)	Mean
Desktop Application (Word, Excel, Publisher etc.)	100.0	0.00	1.00
Databases (Access, Open Educational Resource etc.)	87.5	12.5	1.13
Presentation Software (Power Point, Prezi etc.)	100.0	0.00	1.00
Hypermedia/Multimedia Software/ Web Design	75.0	25.00	1.25
Internet (Google, Bing, Yahoo etc.)	100.0	0.00	1.00
E-learning Portal	97.5	2.50	1.03
Digital telecommunication (Computer-mediated communication, telegraphy, computer networks etc.)	72.5	27.5	1.28
Web 2.0 (Blogs, Wikis, YouTube etc.)/ Social Network (Facebook, WhatsApp, Instagram etc.)	100.0	0.00	1.00

Scale: 1- Always 2- Often 3- Sometimes 4- Seldom 5- Never

As shown in Table 1, all of the lecturers (100%) agreed that they use Desktop Applications (Word, Excel, Publisher, etc). A majority of the respondents (87.5%) use Databases to teach HOTS during their lectures. Every lecturer (100%) in this study utilises Presentation Software. All of the respondents (100%) in this study also agreed that they use the Internet and Web 2.0 as one of their ICT tools and resources. Almost every lecturer uses the E-learning Portal as an ICT tool (97.5%). A large portion of the respondents uses Hypermedia/Multimedia Software/Web Design and Digital telecommunication, at 75.0% and 72.5% respectively.

From the data, most of the lecturers (80%) always use Desktop Applications when teaching their English majors. Lecturers only sometimes (35%) use Databases to teach English majors (M=2.725). Presentation software is the most commonly use ICT tool to teach English. A majority (90%) of lecturers always use presentation software in their classes (M= 1.15). Lecturers only sometimes use Hypermedia/Multimedia Software/ Web Design to teach English majors. A majority of lecturers always use the Internet and E-learning Portal to teach English in class with a mean score of 1.625 for both ICT tools. A small percentage (25%) of lecturers do not use E-learning to teach because they prefer to use hard copies, especially if the information can be found in the library, as quoted by Lecturer A during the interview. From the interview sessions carried out in this study, the lecturers agreed that they are aware of the Internet and they use it to teach and conduct lectures to their English major students. However, digital telecommunication is only sometimes (M=3.425) used by lecturers to teach English. Web 2.0 (M=2.25) are often used in lectures to teach English. The qualitative data comprising interviews with four ESL lecturers revealed that they are aware of ICT and use at least one type of tool to conduct their classes. Lecturers A, B and D use Power Point as the main method of teaching which supports the quantitative data that all (100%) the lecturers use Desktop applications and Presentation Software in their lectures. Lecturer A is aware of hypermedia and multimedia but never used it during lectures. From the quantitative data, only a quarter (25%) of lecturers do not use hypermedia and multimedia to teach English, which supports the idea that some lecturers do not use hypermedia, multimedia or web design to teach English in classes. Lecturers A, C and D mentioned that they use the Internet and Web 2.0 to search for information and research purposes. Lecturer D stated that he or she uses e-learning to upload additional materials online for students' usage.

Table 2 below shows the type of teaching activities used by ESL lecturers

TABLE 2. Teaching Activities that promotes HOTS

	1	2	3	4	5	Mean
Teaching Activities that promotes HOTS	(%)	(%)	(%)	(%)	(%)	
Field trips	0.00	2.50	5.0	15.0	77.5	4.67
Case study	20.0	20.0	32.5	17.5	10.0	2.77
Brainstorming	45.0	30.0	20.0	2.50	2.50	1.88
Problem solving	47.5	30.0	15.0	7.50	0.00	1.83
Interactive lectures	17.5	45.0	22.5	12.5	2.50	2.38
Project-Based Learning	17.5	45.0	22.5	15.0	0.00	2.35
Discuss higher level questions	35.0	37.5	20.0	5.00	2.50	2.03
Engage students in oral presentations	67.5	17.5	10.0	5.00	0.00	1.53
Ask students to reflect on their experiences	50.0	22.5	15.0	12.5	0.00	1.90
Arrange students for small group activities	65.0	10.0	20.0	5.00	0.00	1.65
Create the environment for idea exploration	25.0	47.5	17.5	7.50	2.50	2.15
Sequence questions from concrete to abstract	20.0	37.5	27.5	10.0	5.00	2.43
Stretch the students' thinking beyond reading	32.5	40.0	20.0	5.00	2.50	2.05
Prompt students to make hypothesis	17.5	40.0	30.0	7.50	5.00	2.43
Prompt students to explain their thought processes that promotes a solution	27.5	27.5	37.5	7.50	0.00	2.25
Have students to debate analytically to challenge pre-existing beliefs	17.5	30.0	35.0	17.5	0.00	2.53
Encourage students to engage with guest speakers	7.50	10.0	32.5	37.5	12.5	3.38
Encourage students to find answers to assigned tasks	60.0	35.0	5.00	0.00	0.00	1.45
Encourage students to draw inferences	37.5	42.5	15.0	5.0	0.0	1.88
Encourage students to apply newly taught skills in varying contexts	32.5	50.0	17.5	0.0	0.0	1.85
Encourage students to reflect on how content is related to real world knowledge	45.0	37.5	12.5	2.50	2.50	1.80
Encourage students to analyse functionally (to understand the purpose of something)	47.5	40.0	10.0	2.50	0.00	1.68
Encourage students to analyse critically (to understand the consequences/implications of something)	40.0	42.5	15.0	2.50	0.00	1.80
Encourage students to synthesise information	37.5	32.5	27.5	2.50	0.00	1.95
Encourage students to evaluate information	45.0	37.5	17.5	0.00	0.00	1.73
Stretch the students' thinking beyond reading	32.5	40.0	20.0	5.00	2.50	2.05

Scale: 1- Always 2- Often 3- Sometimes 4- Seldom 5- Never

From the data collected, there are many activities used by ESL lecturers to promote HOTS in their tertiary classrooms. Field trips are the least popular and they are almost never used by lecturers to promote HOTS, with a mean score of 4.675. A majority of lecturers (60%) always encourage students to find answers to assigned tasks in order to promote HOTS (M=0.597) Brain storming and problem solving are popular activities used in lectures to promote HOTS with a large portion of lecturers always using them in classes at 45.0% and 47.5% respectively with a mean score of 1.875 and 1.825 respectively. This data is supported by lecturer A who stated that brainstorming, problem solving, interactive lectures are the most frequently used teaching activities. Lecturer B also agrees that problem-solving is the most commonly used teaching activity to engage higher order thinking skills because students are required to apply their knowledge in such activities. Interactive lectures and project based learning are often used by lecturers to promote HOTS, with a mean of 2.375 and 2.35 respectively.

A significant percentage (67%) of lecturers always engage their students in oral presentations. Engaging students in oral presentations has the second lowest mean score at 1.525, whereas encouraging students to find answers for assigned tasks has the lowest mean

score (M=1.450). Encouraging students to engage with guest speakers is the least used (M=3.375) teaching activity by lecturers to promote HOTs. Encouraging students to synthesise information and encouraging students to evaluate information are also frequently used by lecturers to promote HOTs, with a mean score of 1.95 and 1.725 respectively.

Table 3 below shows the usage of ICT tools and resources among ESL Lecturers:

TABLE 3. Usage of ICT Tools and Resources

	1	2	3	4	5	Mean
Usage of ICT tools and resources to	(%)	(%)	(%)	(%)	(%)	
collect information	62.5	37.5	0.00	0.00	0.00	1.38
analyse information	35.0	32.5	30.0	2.50	0.00	2.00
interpret information	27.5	42.5	30.0	0.00	0.00	2.03
present information	75.0	20.0	5.00	0.00	0.00	1.30
synthesise information	27.5	47.5	25.0	0.00	0.00	1.97
evaluate information	25.0	50.0	17.5	7.50	0.00	2.08
report on students' performance	37.5	35.0	17.5	7.50	2.50	2.03
promote creativity	42.5	42.6	12.5	2.50	0.00	1.75
make informed decisions	32.5	50.0	12.5	5.00	0.00	1.90
facilitate problem solving	30.0	47.5	15.0	7.50	0.00	2.00
facilitate critical thinking	32.5	32.5	32.5	2.50	0.00	2.05
construct knowledge	50.0	42.5	7.50	0.00	0.00	1.58
help students experience student-centred learning	52.5	35.0	7.50	5.00	0.00	1.65

Scale: 1- Always 2- Often 3- Sometimes 4- Seldom 5- Never

Based on the data collected, usage of ICT tools and resources for presenting information is the highest for lecturers who always use ICT tools and resources. Three quarter (75%) of the lecturers always use ICT tools and resources for presenting information in their classes; 20% of lecturers often use them and the remaining 5% only use them “sometimes”. This finding is in line with the qualitative data gleaned from the semi-structured interviews with four lecturers. Lecturer C claimed that she “uses ICT to search for new materials, give me more ideas and to promote creativity”. She goes on to say that “the use of ICT in planning course materials can make the class more interesting and allows easy update on the course materials”. Lecturer D stated that video clips are shown during lectures and students are required to make their own notes and answer a list of questions provided. Usage of ICT tools and resources for collecting information has the lowest mean (1.3750) with a majority (62.5%) of lecturers who always use ICT tools. The use of ICT tools and resources for evaluating information has the highest mean (M=2.075), with half (50%) of the respondents who state that they often use ICT tools for this purpose. More than two-third (72.5%) of the number of lecturers always and often report on students' performance but a minority (2.5%) never use ICT tools to report on students' performance. The internet is used to gather information and video clips are used to summarise the lectures and make the lectures more interesting. All the four lecturers in the interview sessions also stated that they encourage their students to find answers to assigned tasks, which are usually given through ICT tools.

Table 4 below shows the challenges faced by the ESL lecturers when teaching HOTS using ICT:

TABLE 4. Challenges in Teaching HOTS using ICT

	1	2	3	4	5	Mean
Challenges in Teaching HOTS using ICT	(%)	(%)	(%)	(%)	(%)	
I lack ICT skills	0.00	22.5	42.5	35.0	3.13	1.38
I need technology guidance to help me improve my pedagogy.	0.00	47.5	35.0	17.5	2.70	2.00
I cannot keep pace with the rapid changes of ICT tools	5.00	35.0	47.5	12.5	2.68	2.03
I find it difficult to change from my current teaching practice to integrate ICT tools in learning	5.00	10.0	50.0	35.0	3.15	1.30
Extra time and effort is spent after integrating ICT tools in teaching	5.00	40.0	50.0	5.00	2.55	1.98
The internet connectivity is poor	15.0	37.5	40.0	7.50	2.40	2.08
Certain software are difficult to use	5.00	72.5	22.5	0.0	2.18	2.03
There is a lack of collaboration between the IT and non-IT departments	5.00	47.5	45.0	2.5	2.45	1.75
There is a lack of adequate, ongoing professional development to integrate new technologies in the classrooms	5.00	27.5	62.5	5.00	2.68	1.90
ICT integration in teaching	2.50	7.50	65.0	25.0	3.13	2.00

Scale: 1- Always 2- Often 3- Sometimes 4- Seldom 5- Never

As shown in Table 4, the most common challenge in teaching HOTS by using ICT is that lecturers find it difficult to change from their current teaching practice to integrate ICT tools in learning (M=3.150). A majority (87.5%) of lecturers cannot keep pace with the change in ICT tools at least some of the time, which was a challenge specifically faced by lecturer D in the qualitative study. From the interview sessions, lecturer B mentioned that they are “not sufficiently trained to utilise all the available ICT facilities which is why most of the lecturers cannot keep up with the changes in ICT tools”. Half the respondents sometimes find it difficult to change from their current teaching practice into a new method by integrating ICT tools in learning. This finding is supported in the quantitative study. For instance, Lecturer C mentioned that the main challenge in using ICT to teach higher order thinking skills is “time constraint as I need time to implement ICT into my classes...it just takes up too much of my time”. As stated by Lecturer C, there could be “technical problems and a lot of time is needed to pick the appropriate ICT material”. Lecturer D also mentioned that extra time and effort is required in preparing assignments for students using ICT. Both lecturer C and D agree that extra time and effort is spent after integrating ICT tools in teaching as one of the main challenges faced. Most (95%) lecturers from the quantitative study stated that the extra time and effort spent by integrating ICT into their lessons as their main challenge. The internet connectivity is always a challenge in teaching HOTS by using ICT for 15% of the lecturers. Internet connectivity has the highest percentage value for challenges always faced by lecturers in teaching HOTS by using ICT.

A majority of the lecturers (72.5%) often find it challenging to teach HOTS by using ICT because certain software are difficult to use. A large percentage (65%) of the lecturers sometimes find it challenging to use ICT in teaching HOTS because the Instructional Planning does not accommodate ICT integration in teaching. The ineffectiveness of the Instructional Planning, which does not accommodate ICT integration, is the second most challenging factor for lecturers, with a mean of 3.125, which is equal to the mean for lecturers lacking ICT skills. Meanwhile, 35% of the lecturers in this study stated that they do not face any challenges in using ICT. During the interview sessions, Lecturer B stated that she did not face any challenges because everything is provided in the university.

## DISCUSSION

Although the teaching practices of all English major lecturers in Malaysia cannot be exactly represented in this study, the findings indicate that Malaysian lecturers use a variety of ICT tools to assist them in teaching their classes. All lecturers in this study reported that they utilise desktop applications and presentation software for visuals as it livens the classes. The respondents also used the Internet and Web 2.0 in their lessons. This supports the current trend of learning with the usage of ICT. The various ICT tools used by lecturers allow university students to learn in a more interactive way and this will increase their enthusiasm (Stroupe 2006).

The findings of this study reveal that lecturers frequently used HOTS activities in their lectures. Most of the lecturers teaching English majors (72.5%) agreed that high level questions and exploring ideas in their academic learning context are common HOTS activities in their classes. This finding is in line with the findings of other researchers (Zuraina 2009, Razak & Lee 2012). This study also found that lecturers prefer students to find answers for assigned tasks as they promote more HOTS, brain storming and problem-solving activities were also commonly used by English lecturers. Field trips are almost never used by the ESL lecturers in this study to promote learning as they rarely involve the usage of ICT. Oral presentations are common activities during English lectures as they promote HOTS and students' interaction with one another. Most of the lecturers surveyed in this study mentioned that a wide range of ICT tools are used in their lectures in the university which help promote the development of students' HOTS. The lecturers mentioned that they use ICT to collect and present information pertaining to their course content and they feel that ICT allows easy access to a variety of information online which helps lecturers plan their lessons and search for new information.

Despite the frequent use of ICT tools by the lecturers, there are still many challenges faced by them in teaching HOTS using ICT. A large number of lecturers admit that they lack ICT skills ( $M=1.38$ ) and they find it difficult to change from their current teaching practice to integrate ICT tools in learning ( $M=1.30$ ). From the results, their greatest challenge was changing from their current teaching practice to integrate ICT tools ( $M=1.30$ ). Some researchers in the past have pointed out that learning and technology can take time depending on students' prior learning experiences (Stroupe 2006, Moir 2013, Orszag 2015). Lecturers now need to factor in the new teaching practice into their planning time and they require time to adapt themselves to the new system. For facilitating teaching HOTS using ICT in tertiary classrooms, careful decisions have to be made to ensure that students are able to learn HOTS in the various types of activities using ICT for example, through interactive lectures.

Based on the results of this study, present and future English major lecturers have better ideas to implement more effective teaching methods for their classes. There is still room for improvement and improvisation for other similar degree programmes to implement higher order thinking skills in lectures through the effective use of ICT tools to promote better learning. Today it has become essential that tertiary lecturers are able to engage learners in meaningful learning experiences by enhancing and developing students' critical and higher order thinking repertoires in many linguistics and literature courses offered in the degree programme. Lecturers need to update themselves with the current ICT usage as this will provide a form of technological guidance for learners in utilising ICT to learn HOTS. The learning outcomes and lesson plans can be tailored according to the HOTS pedagogies in order to maximise students learning.

Lecturers today are constantly reminded to update themselves on ICT usage and to include them in their lessons to maximise the learning of HOTS among their students. It can be clearly seen that everyone plays a role in promoting the usage of HOTS through ICT,

including lecturers, students and university administrators. All of them have a clear goal towards creating a more effective learning context that fosters the learning of HOTs, which has the potential of preparing their students for future globalised workplaces. Lecturers should be made aware that their classes should include activities using a variety of ICT tools when designing course assignments, semester essays and oral presentations. The use of ICT can help diversify the lesson plans and lectures to make them much more interesting and interactive for today's digital learners. Students will be able learn in a more productive environment especially when their lecturers are aware of the importance of HOTs and have a good grasp on the usage of ICT.

## CONCLUSION

The current world involves the use of information and technology in almost any individual's life. Lecturers have to learn and adapt themselves to a digital world where there are a wide range of sources and online tools and software technologies. The rapid advances in technological tools and its related complexity allow innovative yet interactive forms of learning, teaching, interaction and communication. It is undeniable that there are many benefits for lecturers to teach using ICT tools and update themselves as well to keep up with the modern era. Lecturers who are adept in utilising ICT in their classes, especially through the usage of a variety of ICT tools, are able to create more interesting and effective learning experiences for students. Students' academic learning will improve in significant ways when they are able to interact with the lecturers through a variety of HOTs activities made possible by the usage of ICT such as power point presentations featuring assigned tasks and other related activities that enhance their cognitive thinking processes. From this research, it can be seen that lecturers have to face the challenges of utilising HOTs in their teaching in order to promote optimum learning for students. Although more time will be needed to implement HOTs activities in the lesson plans, it is worth it especially towards inculcating HOTs among tertiary students. Learning HOTs through ICT has a high potential of promoting positive learning outcomes due to the various benefits it brings to the table. The challenges in using and integrating technology in the learning environment are not a dead end as such obstacles can be overcome by the lecturers as long as they keep themselves up to date with current ICT trends (Nafiseh Zarei & Supyan Hussin 2014) such as using power point presentations and utilising E-learning in their tertiary classrooms.

## ACKNOWLEDGEMENT

The writers would like to thank Universiti Sains Malaysia for the research grant to carry out this study.

## REFERENCES

- Ali, S. N. (2012). Malaysian polytechnic lecturers' teaching practices with ICT utilization to promote higher-order thinking skills. *Graduate Theses and Dissertations, Paper 12623*. Iowa State University.
- Chittleborough, G., Jobling, W., Hubber, P. & Calnin, G. (2008, January). *The use of Web 2.0 Technologies to promote higher order thinking skills*. Paper presented at the International Education Research Conference-Brisbane 2008, 18-20 January, 2008.
- Choy, S. C. & Cheah, P. K. (2009). Teacher Perceptions of Critical Thinking among Students and Its Influence on Higher Education. *International Journal of teaching and learning in Higher Education*. Vol. 20(2), 198-206.
- Crawford, C. M. & Brown, E. (2002). Focusing Upon Higher Order Thinking Skills: *WebQuests and the Learner-Centered Mathematical Learning Environment*. Education Resources Information Centre (ERIC).

- Ganapathy, M. Shuib M. & Azizan, S.N. (2016). Malaysian ESL students' perceptions on the usability of a mobile application for grammar test: A case study of ESL undergraduates in Universiti Sains Malaysia. *3L: The Southeast Asian Journal of English Language Studies*. Vol. 24 (3), 1051-1068.
- Majumdar, S. (2015). *Emerging Trends in ICT for Education & Training*. Retrieved from: <http://www.unevoc.unesco.org/fileadmin/up/emergingtrendsiniectforeducationandtraining.pdf>
- Marzano, R. J. & Kendall, J. S. (Eds.). (2006). *The New Taxonomy of Educational Objectives*. Corwin Press.
- Moir, J. (2013, June). *New Technologies, The Curriculum and Higher Order Skills*. Retrieved July 20, 2015, from <http://www.enhancementthemes.ac.uk/pages/docdetail/docs/paper-technologies-the-curriculum-and-higher-order-skills>
- Nafiseh Zarei, & Supyan Hussin. (2014). Impact of Learning Management Blog on Students' Language Learning and Acquisition. *GEMA Online® Journal of Language Studies*. Vol. 14(3), 51-63.
- Narayanan, S. & Adithan, M. (2015). Analysis Of Question Papers In Engineering Courses With Respect To Hots (Higher Order Thinking Skills). *American Journal of Engineering Education (AJEE)*. Vol. 6(1), 1-10.
- Orszag, A. (2015). *Exploring Finnish University Students' Perceived Level of Critical Thinking*. Faculty of Education, University of Jyväskylä.
- Othman, N. & Mohamad, K. A. (2014). *Thinking Skill Education and Transformational Progress in Malaysia*. *International Education Studies*. Vol. 7(4), 27-28. Pappas, Eric. "Teaching Thinking and Problem Solving in the University Curriculum: A Rationale."
- Petko, D. (2012). Lecturers' pedagogical beliefs and their use of digital media in classrooms: Sharpening the focus of the 'will, skill, tool' model and integrating lecturers' constructivist orientations. *Computers & Education*. Vol. 58(4), 1351-1359.
- Razak, R. A. & Lee, C. M. (2012). Promoting Higher Order Thinking In Chinese Language Literary Text via Online Social Network. *Journal of Education and Practice*. Vol. 3(16), 199-209.
- Stroupe, R. R. (2006). Integrating critical thinking throughout ESL curricula. *TESL Reporter*. Vol. 39(2), 42-60.
- Subran, D. (2013). Developing higher-order thinking skills with ICT. Retrieved from: <http://hdl.handle.net/2139/15701>
- Waycott, J., Bennett, S., Kennedy, G., Dalgarno, B. & Gray, K. (2010). Digital divides? Student and staff perceptions of information and communication technologies. *Computers & Education*. Vol. 54(4), 1202-1211.
- Zohar, A., Degani, A. & Vaaknin, E. (2001). Lecturers' beliefs about low-achieving students and higher order thinking. *Teaching and Teacher Education*. Vol. 17(4), 469-485.
- Zuraina, A. (2009). A Case Study on Collaborative Learning to Promote Higher Thinking Skills (HOTS) among English as a Second Language (ESL) Learners. *Jurnal UMP Social Sciences and Technology Management*. Vol. 1(1), 23-38.